



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/562,395

12/27/2005

Junji Kodemura

4670-0115PUS1

7922

2292 7590 11/27/2009  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

CLARK, GREGORY D

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

11/27/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/562,395	<b>Applicant(s)</b> KODEMURA ET AL.	
	<b>Examiner</b> GREGORY CLARK	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09/29/2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/29/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/29/2009 has been entered.

Examiner acknowledges the receipt of the Applicant's Amendment, received 09/29/2009. Claims 1 amended; 2-8 original and 9 withdrawn.

Rejections and objections made in the previous office action that do not appear below have been overcome by applicant's amendments and therefore the arguments pertaining to these rejections/objections will not be addressed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda (JP2001326434A) in view of Kishi (JP2002338664A) and Swisher (US 5,112,464).**

1. **Regarding Claim 1**, Kanda teaches a laminated body made from a bulk polymerization of a norborene monomer (cyclic olefin) using a ruthenium catalyst (paragraph 6). Kanda does not teach the use of inorganic fillers.

Kishi teaches a norborene polymer and discloses several inorganic fillers including metal oxides and metal hydroxides (paragraph 24). Kishi further discloses that the mass (bulk) polymerization of these agents is carried out with a norbornene system monomer for the purpose of improvement in mechanical properties, such as contraction of the norbornene system resin-molding object acquired, and an elastic modulus, coloring, flameproofing, rigid grant, low-thermal-expansion, increase in quantity, a weight saving, electric conduction grant, or the prevention from electrification (paragraph 22).

It would have been obvious to someone of ordinary skill in the art at the time of the invention to incorporate such fillers to achieve the properties listed in paragraph 22 of Kisha listed above.

Kanda and Kisha fail to mention the adhesion value between the molded product and the plating layer as 0.4 kN/m or more.

Art Unit: 1794

Swisher discloses that metal oxides are used to promote adhesion between a metal layer and a film layer in a laminate (abstract). The metal oxides include oxides of Al, Ti, Zr and Fe (column 5, lines 35-38). The examiner notes the aluminum oxide is listed in the applicants' specification as a preferred metal oxide on page 7. The film layers disclosed by Swisher include a variety of polymeric films (column 6, lines 45-60). The metal layers disclosed by Swisher include Al and Cu (column 8, lines 1-2). The metal layer is formed by electroplating (column 10, lines 20-25). The examiner notes that electroplating of copper is listed in the applicants' specification page 25 as a method to form the metal layer. Swisher discloses that the effect of the metal oxide on the peel strength is directly proportional to the random distribution of the metal oxide in the laminate (column 12, lines 6-10). Swisher shows in Table III (column 15) shows peel strength values ranging of 3.8-11.2 lb/in which is equivalent to 0.6-1.9 kN/m (Laticrete Conversion Factors Chart). The applicant claims 0.4 kN/m or more.

Kanda and Kisha teach the claim limitations but fail to mention the adhesion value between the molded product. Swisher clearly discloses that the same metal oxides used by the applicant were used in the art at the time of the invention to promote adhesion between an electroplated metal layer and a film layer.

Since Kisha (paragraph 24), Swisher and the applicant use the same or similar metal oxides (i.e., aluminum oxide), the metal oxide of Kisha would also promote adhesion between the molded product and the plating layer.

As Swisher teaches that the peel strength is directly proportional to the random distribution of the metal oxide in the laminate, the metal oxide concentration is a cause effect variable for adhesion strength or peel strength.

With the expectation of success, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have adjusted the metal oxide concentration in the laminate of Kanda and Kisha to achieve an adhesion between the molded product and the plating layer based on the teaching of Swisher which would include adhesion values that overlap the claimed range.

2. **Regarding Claim 2**, Kanda further teaches the use of several ruthenium carbene complex compounds, such as benzylienerutheniumdichloride and a ruthenium carbene complex compound, such as bis(1,3-dicyclohexyl 4-imidazoline 2-ylidene) benzylienerutheniumdichloride (paragraph 22).

3. **Regarding Claim 3**, Kishi further teaches the use of several inorganic fillers which fall into the class of metal oxides and metal hydroxides some of which include: titanium oxide, antimony oxide, zinc oxide, magnesium oxide, aluminum oxide, magnesium hydroxide, aluminum hydroxide, calcium hydroxide, magnesium hydroxide and aluminum hydroxide (paragraph 24).

4. **Regarding Claim 4**, Kanda further teaches the use cyclic olefin monomers which contain only one double bond such as norbornene, methyl norbornene, Dimethyl

Art Unit: 1794

norbornene, ethyl norbornene, chlorination norbornene, chloromethyl norbornene, and trimethylsilyl norbornene (paragraph 7).

5. **Regarding Claim 5**, Kanda fails to teach the use of chain transfer agents (*retardants*). The applicant gives example in the specification for the types of chain transfer agents (retardant) useful in the invention which include vinyl norbornenes. Kishi teaches the use of chain transfer agents (*retardants*), such as vinyl norbornene, propenyl norbornene, and isopropenyl norbornene to control the polymerization initiation rate (and thus control molecular weight) (paragraph 55).

It is commonly known in the art that the molecular weight range of a polymer can affect properties such as solvent resistance and elongation. There would have been clear motivation to control the molecular weight range of a polymer to optimize such properties.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to would have carried out the polymerization in the presence of a chain transfer agent (retardant) to give a polymer with a suitable molecular weight range to achieve the desired physical properties of the polymer, absence a showing of unexpected results.

6. **Regarding Claims 6 and 7**, Kishi discloses a method of carrying out mass polymerization of the norbornene system monomer in a metallic mold by the resin

Art Unit: 1794

transfer molding (RTM) method or a reaction-injection-molding (RIM) method. A metallic mold is used in order to obtain a molded product of specified shape norbornene (paragraph 63). Although Kishi does not mention the specific temperature of the reaction within the metallic mold, the same class of cyclic olefin is used as the applicant.

Therefore, regarding the temperature claimed, such would be readily determined by routine experimentation in an effort to produce the optimum results. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).

7. **Regarding Claim 8**, Kanda further teaches a laminated body where in the plating layer is formed by electroless plating and in some cases electrolytic plating (paragraph 33).

### ***Response to Arguments***

The applicant arguments with respect to the resulting molded product exhibiting a minimization in the deterioration in catalytic activity and molded product with a higher heat-tolerance are not incorporated in the claim limitations.

The applicant argues that Kanda is directed to a method of producing insulating substrates.

The examiner counters that although the invention of Kanda is directed to a method for producing insulating substrates for printed circuit boards by subjecting a stock solution containing a norbornene monomer and a metathesis polymerization catalyst (such as a ruthenium catalyst) to bulk polymerization, a person of ordinary skill

Art Unit: 1794

in the art at the time of the invention would combine the teachings of Kanda with that of Kanda which clearly discloses the norbornene monomer metathesis polymerization can be carried out in the presence of inorganic fillers. The claimed concept which meets the criteria of the claimed invention is known..

Kishi clearly indicates that the fillers used in the invention improve mechanical properties. The applicant mentions the absence of an appreciation for the adhesion promotion advantages of using an inorganic filler in the reference but has not incorporated such advantages in the claimed invention. At the time of the invention a person of ordinary skill in the art would have gain sufficient insight on norbornene monomer metathesis polymerizations with a ruthenium catalyst in the presence of inorganic fillers to carry out a process the meets the criteria of the claimed invention.

The applicants' argues that the inorganic filler is added in order to improve the adhesion between a molded product and a plating layer and this advantage is not recognized by Kishi since Kishi is not concerned with the adhesion of a plating layer to a molded product.

The examiner counters that Kishi uses metal oxide fillers in the presence of the polymerization of norbornene monomers which improve the contraction properties of the resulting norbornene resin with respect to molding the resin to an object. The examiner takes the position that the ability to improve the contraction properties would act to improve the adhesion properties of the resin by preventing the resin from withdrawing from the surface doing the cooling cycle.

The applicant argues that Kisha teaches organic and inorganic filler that contributes in an indeterminate manner to the final properties.

The examiner counters that Swisher discloses that metal oxides are used to promote adhesion between a metal layer and a film layer in a laminate (abstract). The metal oxides include oxides of Al, Ti, Zr and Fe (column 5, lines 35-38). Swisher also teaches adhesion strength ranges that overlap the claimed range. This in effect shows that inorganic fillers alone were known in the art at the time of the invention to promote adhesion strength values in the claimed range.

Moreover, Kanda and Kisha teach the claimed limitations but fail to mention the adhesion value between the molded product. Swisher clearly discloses that the same metal oxides used by the applicant were used in the art at the time of the invention to promote adhesion between an electroplated metal layer and a film layer.

Since Kisha (paragraph 24), Swisher and the applicant use the same or similar metal oxides (i.e., aluminum oxide), the metal oxide of Kisha would also promote adhesion between the molded product and the plating layer.

As Swisher teaches that the peel strength is directly proportional to the random distribution of the metal oxide in the laminate, the metal oxide concentration is a cause effect variable for adhesion strength or peel strength.

With the expectation of success, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have adjusted the metal oxide concentration in the laminate of Kanda and Kisha to achieve an adhesion between the

Art Unit: 1794

molded product and the plating layer based on the teaching of Swisher which would include adhesion values that overlap the claimed range.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1794

GREGORY CLARK/GDC/  
Examiner  
Art Unit 1794